

SCHOOL: **Your school name****SENIOR TWO CHEMISTRY · UNIT 7 HOMEWORK****Preparation and classification of oxides · FREE SAMPLE****MARKING SCHEME (TEACHER'S COPY)****Academic year:** 20..... – 20.....**Date:**/...../20.....**Duration:** Take-home**Total marks:** 16**INSTRUCTIONS**

1. Answer ALL questions.
2. Write your answers in the spaces provided.
3. This free sample is a short extract. A full homework sheet has 25 marks.

PART 1: OBJECTIVE QUESTIONS*Answer ALL questions. The marks are shown for each question.*

1. A solution of carbon dioxide in water has pH: (1 mark)
- A. slightly below 7
 - B. 14
 - C. exactly 7
 - D. above 7

Answer: A. slightly below 7**Explanation:** Carbonic acid is a weak acid.

2. Farmers use slaked lime to: (1 mark)
- A. kill crops
 - B. add nitrogen
 - C. reduce soil acidity
 - D. increase soil acidity

Answer: C. reduce soil acidity**Explanation:** It neutralises acids in the soil.

3. Matching. Match each item in column A with the correct answer in column B. Write the letter in the answer column. (4 marks)

Column A	Answer	Column B
1. Which is the product when calcium oxide reacts with water?	c	a. Carbon dioxide
2. Which oxide is used in fire extinguishers?	a	b. $\text{Cu}(\text{OH})_2 \rightarrow \text{CuO} + \text{H}_2\text{O}$
3. Which equation shows zinc oxide acting as an acid?	d	c. Calcium hydroxide

4. Which reaction prepares an oxide by heating a hydroxide?	b	d. $\text{ZnO} + 2\text{NaOH} \rightarrow \text{Na}_2\text{ZnO}_2 + \text{H}_2\text{O}$
Answer: 1 → c, 2 → a, 3 → d, 4 → b Marking: 1 mark for each correct match (4 marks).		

PART 2: SHORT ANSWERS

Answer in full sentences.

4. Calculate the mass of CaO formed from 50 g of CaCO_3 . (4 marks)

Model answer: $0.5 \text{ mol} \times 56 = 28 \text{ g}$.

Marking: 1 mark for each correct key point in the model answer, up to 4 marks. Accept other correct wording.

Common mistake: Using Mr of Ca(OH)_2 .

PART 3: STRUCTURED QUESTION

Show all your reasoning.

5. **Preparation and classification of oxides** (6 marks)

Explain why acidic oxides in the air damage zinc-coated iron roofs and suggest a protection method.

Model answer: SO_2 and CO_2 dissolve in rain to form acids. [2]

Acids react with the zinc coating (and then iron): $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$. [2]

Protection: paint the roof or use aluminium-zinc coated sheets. [2]

Marking: Give the marks shown in brackets [] for each step. Accept any correct equivalent answer.

Watch out: Zinc reacts with acids because it is above hydrogen in the reactivity series.

END